3.3 Panel 6: Benefits of Wind Power to Hawaii

3.3.1 Panel Chair:

Tom Gray – American Wind Energy Association (AWEA)

Presentation charts follow

BENEFITS OF WINDPOWER TO HAWAII

Hawaii Windpower Workshop
March 22, 1994

BENEFITS OF WINDPOWER TO HAWAII

- Economic
- Environmental
- Energy security

ECONOMIC BENEFITS

- Increased employment
- Reduced supply risk
- Reduced price risk
- Reduced CO_2 reg. risk
- Favorable trade balance

ECONOMIC BENEFITS

How to quantify?

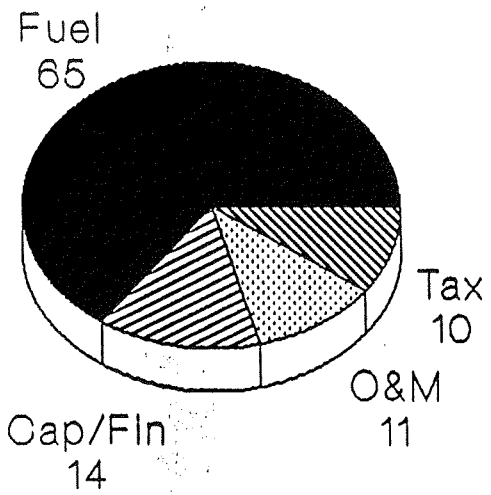
- Few recent studies
- Findings positive, but variable
- AWEA plans national study
- Hawaii study probably needed
- Exports even more imponderable

EMPLOYMENT STUDIES

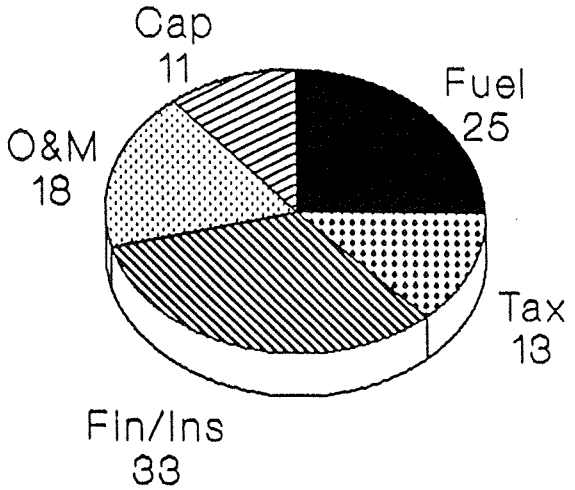
- NYSEO
- UCS/Powering the Midwest
- Wisconsin
- California
- Hohmeyer

CONVENTIONAL ENERGY

Fuel, Not Jobs



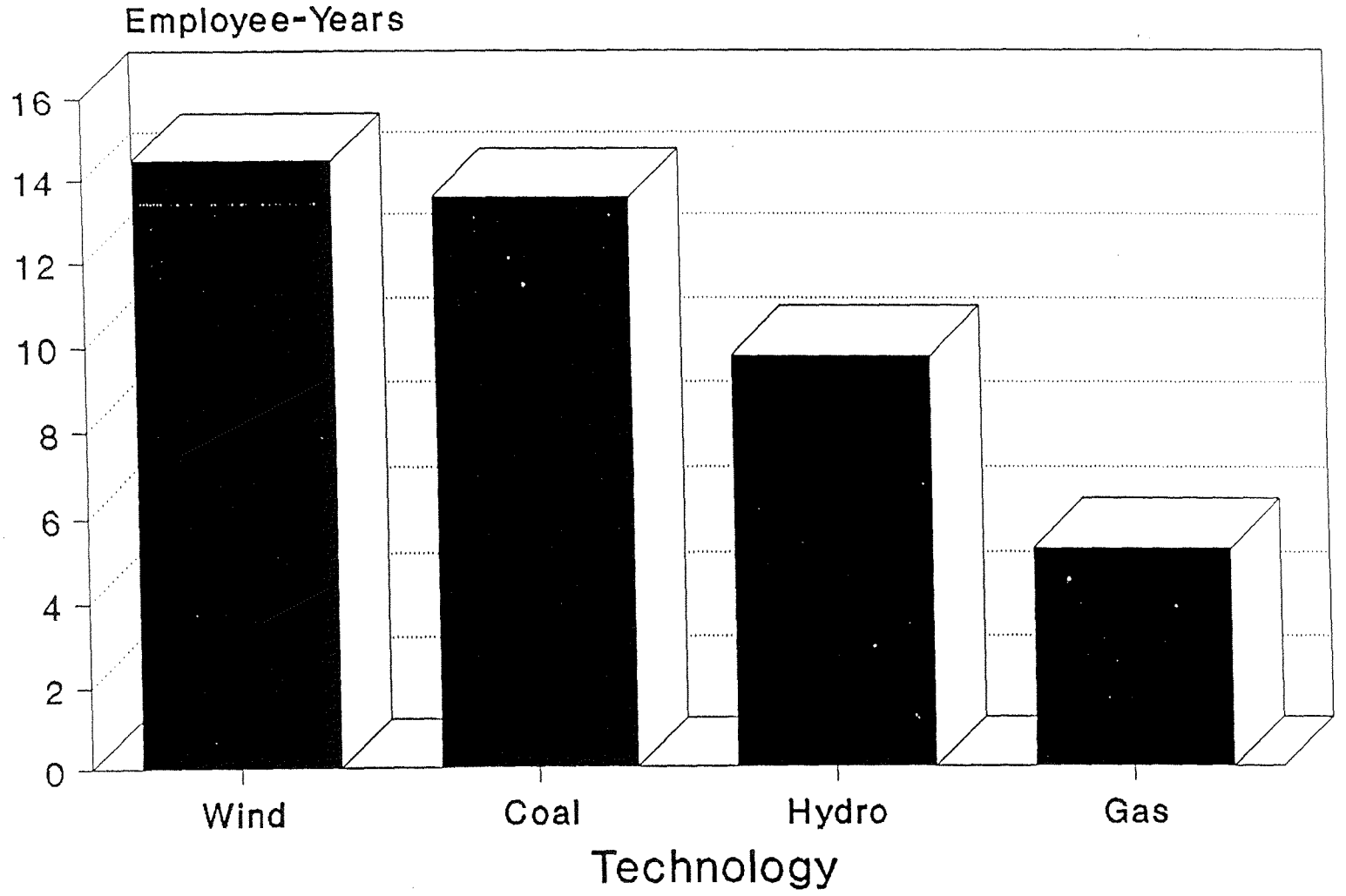
Gas



Coal

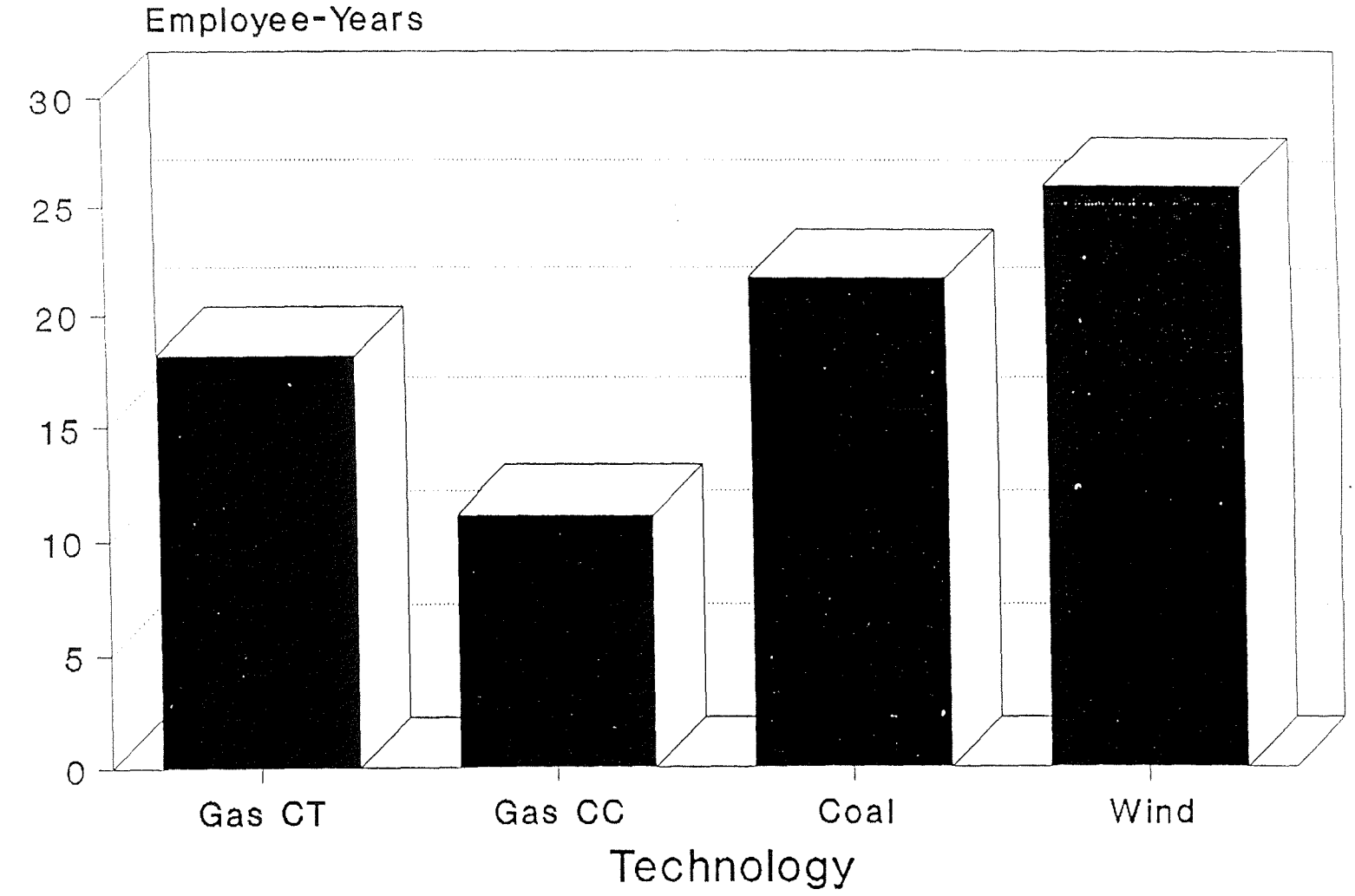
NYSEO 1992

Jobs Per $Million



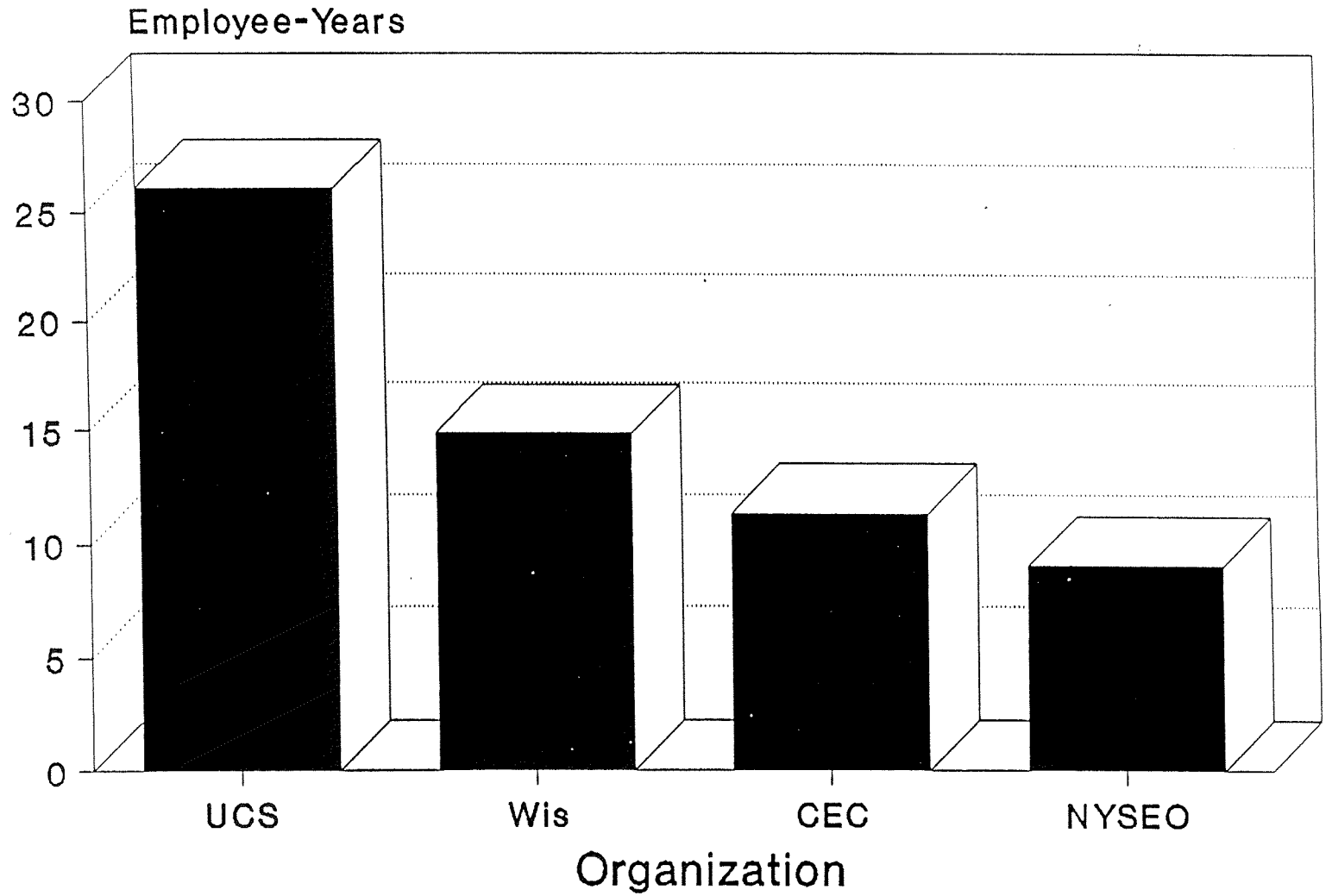
NYSEO 1992

JOBS PER GWH



UCS 1993

JOBS PER GWH


Employee-Years
30
25
20
15
10
5
0
UCS
Wis
CEC
NYSEO
Organization

REDUCED SUPPLY RISK

- 90% dependence on oil
- 30 days reserve
- The sky isn't falling, BUT
- Fundamentals remain negative

OTHER ECONOMIC BENEFITS

- Reduced price risk
- Reduced CO_2 regulatory risk
- Favorable balance of trade
- Export potential

ENVIRONMENTAL BENEFITS

- Reduced greenhouse gas emissions
- Reduced risk of oil spills
- Reduced air toxics emissions

TIMING ISSUES

- NZ begins wind development
- Clinton greenhouse policy
- Wind R&D funding boost
- Windpower 2000

3.3.2 Panel Members

Richard Joun–State of Hawaii DBEDT
John Mapes–Division of Consumer Advocacy, Dept. of Commerce
Paul Brewbaker– Bank of Hawaii

Panel Responses

Richard Joun - State of Hawaii DBEDT

Although Dr. Joun was in agreement with most of the points made by Tom Gray, he proposed that perhaps Hawaii and smaller states like it should develop their own perspective and should look at wind power more carefully to determine its benefits to Hawaii.

Referencing a study on the use of bagasse for electricity DBEDT conducted in 1970 to help the sugar industry survive while producing electricity from a renewable resource, he noted the irony in the sugar plant shut downs which represented the loss of a renewable energy source for Hawaii.

The predictions made in the 1980 *Integrated Energy Assessment* study carried out by DBEDT were overly optimistic, he acknowledged, particularly with regards to the energy self sufficiency of Molokai. Nevertheless, this was a good lesson to learn from in understanding how assumptions should be made in the planning process. The installation of the first wind turbines at Kahuku, generated great expectations and hope in Hawaii and obviously the reliability was lower and operational costs were higher than expected. So we should learn from past experiences not to get carried away by idealism and focus on the economic realities in the planning process, he explained.

According to data for energy costs available to DBEDT at this time, it appears that the costs of generating electricity are higher for wind power than for fossil fuels in Hawaii. Dr. Joun noted that this could change in the very near future with the technological breakthroughs taking place to reduce costs and increase the reliability of wind power.

While he agreed there are many economical benefits that should be and could be included in the computation of economic costs for wind power, more work has to be done in quantifying these externalities. Unfortunately, the actual costs of energy, or the external costs, are borne by society rather than the individual investor, he explained. So there has to be a recognition by government that there are these benefits that will not be accrued to the individual investor.

Besides the pecuniary costs or the external costs that can be measured, there are also non-pecuniary costs such as the greenhouse effect and air pollution for which there are no monetary quantifications. These are difficult to quantify or use to compare with different energy sources. Option value concepts is one approach to quantifying these non-pecuniary costs. The state's *Limited Resource Study* also attempted to quantify the social impacts of the environmental costs and benefits.

The real issue to be decided by society is, who is going to pay for these costs - the voters via a tax such as Clinton's btu tax or the government through subsidies, tax credits etc.?

There are, however, strong organized lobbying groups resistant to any efforts to quantify these costs. And there are strong competing needs for money in government so we need to decide how to allocate the resources of government, he said adding that he realized this was a quid pro process.

Furthermore, he added the government needs to decide what accounting system to use, whether it be the current monetary price system or an alternative environmental monetary system. The fundamental value system needs to be discussed, he said in closing.

John Mapes - Division of Consumer Advocacy, Department of Commerce

As a representative of the Division of Consumer Advocacy (DCA), Mr. Mapes presented the perspective of the DCA.

The mandate of the DCA is to advance the interests of Hawaii utility consumers before the PUC or in other words to oppose the excessive and unproductive charges being levied on Hawaii rate payers. As such, their concerns are essentially to determine how these benefits will be distributed and how they will be paid for.

The DCA's responsibility is to make sure that Hawaii rate payers will not pay more than their share while still receiving some of the benefits of wind power. The uncertainty of how this will work itself out is related to the interplay of three factors being:

- DCA's expectation that wind power improvements will be done by non-utility generators or independent power producers as opposed to the utilities,
- current avoided cost basis for payment to the non-utility generators, and
- current change which is being undertaken in integrated resource planning in the regulatory arena

Defined as the costs an electric utility would incur to generate power if it did not purchase that power from another source, avoided costs are generally a factor in determining how much the independent power producers get paid for their power. However, avoided costs are also used to select resources, not to determine which resources will be used, Mr. Mapes explained.

The selection of resources is expected to be done somewhat differently in the IRP movement. The DCA is optimistic about the IRP approach and views it as a progressive step that recognizes the long term better than previous approaches.

"We favor the total cost approach to combining the direct utility cost with the externality cost of a resource. However, IRP leaves us up in the air about how these resources are going to priced," he said outlining the situation currently faced by non-fossil resources.

Let us say, for example, that the utility avoided costs are calculated at 8¢/ kWh and the alternative option cost 9¢/kWh to implement. This situation would cause the alternative option not to be selected. However, if the alternative option cost 7¢/ kWh to implement, this resource would be selected since it can be implemented for less than the avoided cost. The power producer gets the benefit of being able to produce power at less than the avoided costs and the public benefits by the uncalculated externalities that may have been accrued to the utility option. Thus, there is a divergent benefit related to this kind of selection of payment procedure.

The emerging procedure in the IRP process is moving away from the traditional least cost resource selection to a situation where the total costs of options are considered in an attempt to rigorously compare resources. In this procedure, if for example, the utility option cost 12¢/ kWh and the alternative option cost 9¢/ kWh, the non-utility option should be selected because its total cost is lower than the utility's or the next best alternative. The question that follows is, how much should be paid to this option - 12¢/ kWh or 9¢ /kWh?

"My point is," said Mr. Mapes, "we don't know. There is no clear mechanism currently in place to tell us. Because we are assuming that this is non-utility generation, we don't really know what the height of that alternative option band is. This is the crux of our major problem related to the importance of alternative supply resources."

"During the course of this workshop we have heard of the willingness of Hawaii's people to pay for renewable technology. While this may be quite likely, at this point, a mechanism to provide an equitable way for them to do

that has not yet been developed and it will be easier for the DCA to get on the team once that is in place," Mr. Mapes said in closing.

Paul Brewbaker – Bank of Hawaii

As an economist coming from a commercial bank, Mr. Brewbaker said he is acutely aware of the difference between commercial viability and economic viability. The reason wind power has not been commercially viable is because of its reliability and O&M costs.

"We're still a bit away from commercial viability here in Hawaii," Mr. Brewbaker contended. "The reality is that declining oil prices and the global economy we now have make it harder for proponents of wind energy to make a case."

Using oil prices of 5 year ago, Mr. Brewbaker ascertained that Hawaii imported $1.1B of crude oil. This year, at a price of $15/barrel, we will import less than $700M. That kind of savings makes it harder for wind power to make a case, he said.

A recent *Honolulu Advertiser* poll indicated that 75% of the general public supports alternative energy. However, an equally proportionate number of people would oppose paying a peak load pricing tax on their commuting to work even though in the abstract they support alternative energy.

We need to gauge what the premium might be that society is willing to pay until it is commercially viable, he said. This depends on three things:

- *External costs* - including the future liability risks that have not been quantifiable, such as supply destruction and price volubility. Society might be willing to pay a premium to preserve the option value that are subject to these yet unidentified risks until the price of oil goes up or such time that R&D brings the price of wind power down. This is a political question, Mr. Brewbaker said.

- *Education* - not only of our young people but adults, particularly legislators need to be educated on externatility theory and natural resource economics.

- *Economic viability* - The calculus undertaken to determine the social costs don't have a bottom line equivalent that the regulatory system can use to measure against. Until you can close that gap or convince policy makers that those costs need to be recognized and paid for, we will continue to have a problem, Mr. Brewbaker said in closing. -

Question:

The state's consensus seems to be that wind is not economically viable. I'd like to challenge that. The perception that wind is not economically viable is not supported by the facts. In California since 1986, we have installed 10,000 windmills without any tax credits and public assistance. That experience indicates that the industry and the technology is viable. In addition, many proposals put forward by wind developers for 100 MW projects, are pricing wind power at 5¢ to 6¢ kWh which is extremely competitive with fossil fuels. Obviously the developers who are making these proposals would not be doing so if they didn't want to make money.

Answer:

Richard Joun - State of Hawaii DBEDT

I think that is quite right. However, all of the information that I have available to me does not indicate that. I think dissemination of information is lacking. Let me propose an example of how information, not properly disseminated, can give an incorrect assessment.

I made a personal investment by installing a solar panel for my residence which is now nearly paid off. I installed it for the tax benefits. At the time, I did not realize the rate of return because this information was not properly disseminated.

I believe wind might be viable especially in small isolated areas such as the fishing village on the Big Island (ref: panel 3.2-Lawrence Mott). Wind might be a better economical solution than any other option. This information is not properly disseminated.

I suggest that the state legislature provides us with the funds to study and disseminate this information from Hawaii's perspective and perhaps set a rule guarantee for implementing wind energy in areas where wind is a much better option.

Question:

On the mainland, wind energy systems are viable and cost-effective. Yesterday, we heard from a utility that they are paying 3½¢ kWh for avoided costs. Perhaps there is something on the mainland that allows for systems to be installed at higher avoided costs. There should be some mechanisms to allow the gap to be narrower on the mainland than in Hawaii. Perhaps certain things apply here that don't apply there.

Answer:

Tom Gray - American Wind Energy Association

Part of the answer is that many of the systems which have been installed on the mainland were installed under utility contracts that are no longer being offered because the avoided costs applied at the time the contracts were negotiated are higher than the avoided costs for which systems are currently being installed under.